

ECE 344 - Microprocessors
Entrance Knowledge Probe
August 2019

Name: _____

10 Points

1. What is the minimum number of bits that is needed to represent the unsigned decimal value of 12,375?

2. Fill in the following table showing the equivalent representation of the binary number 01010110. 10 Points

Two's complement	Decimal	Hexadecimal

30 Points

3. You will use the combinational circuit shown below, as figure 1, to answer the next set of questions.

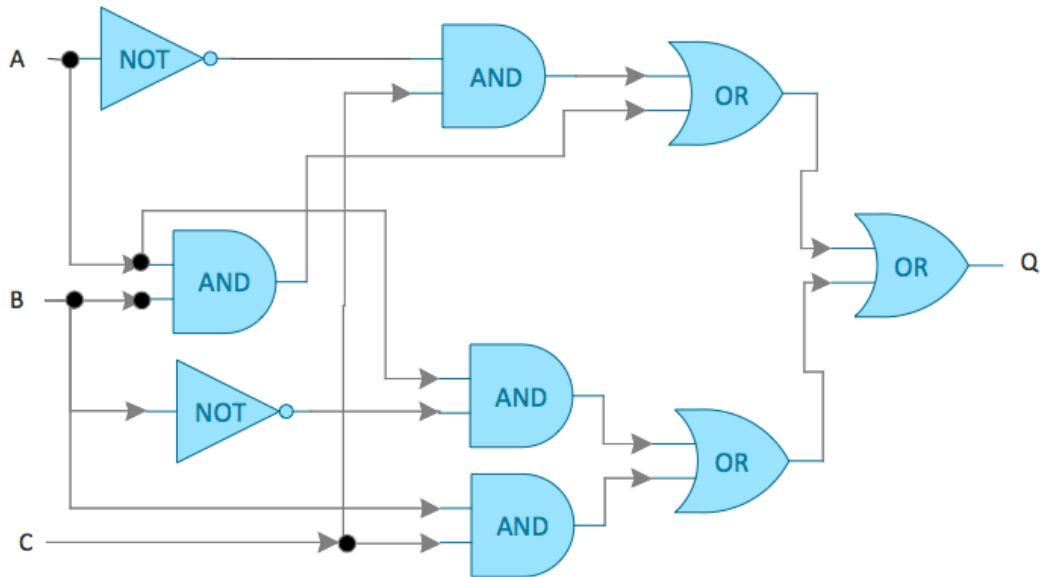


Figure 1

- a. Give the Boolean function, $f(A,B,C)$, for the output of the circuit given in figure 1.

b. Generate a truth table for the output Q, given all possible values of the inputs A, B, C.

c. Given the Boolean function and truth table, determine if the Boolean function can be reduced. Show your work and if possible, give the reduced Boolean function.

4. Given two combination locks:

20 Points

A.



B.



A. Which of any of the two locks would represent a function that is similar to a combinational circuit? Why?

B. Which of any of the two locks would represent a function that is similar to a sequential circuit? Why?